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<p>(54) Title: HINGE DEVICE FOR A RETRACTABLE FACE GUARD ON A SAFETY HELMET</p>		
<p>(57) Abstract</p>		
<p>A hinge device for a retractable face guard (1) on a safety helmet (3) has an attachment (4) associated with the guard, and a holder (5) mountable on the helmet for the attachment, there also being a latching means for latching the attachment in different angular positions relative the holder. A spring biased latch member on the holder forms the latching means together with edge surfaces on the attachment.</p>		

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Hinge device for a retractable face guard on a safety helmet

The present invention relates to a hinge device for a retractable face guard on a safety helmet, the device having an attachment associated with the guard, and including a substantially flat guide portion, and
5 a holder detachably mounted on the helmet, with guide means for the guide portion, allowing the attachment to be pivotable in the holder about an axis at right angles to the guide portion, there also being a latching means for latching the attachment in
10 different angular positions relative the holder.

For the purpose of protection it has become more and more usual to arrange face guards on safety helmets. In such cases it is desirable to enable retraction of the face guard from a downward,
15 operative position to an upward inoperative position. The hinge means shall here ensure that it is easy to move the guard between these positions, while also ensuring that it is well fixed in both operative and inoperative positions. Furthermore, the device must be
20 robust and capable of withstanding use in difficult conditions, as well as not being implemented such that there is a risk of its getting caught in different obstructions when in use.

Several different types of hinge device have
25 been proposed and are on the market, although none of them offers complete solutions to the problems mentioned above. In a type of hinge device mentioned in the introduction, according to the Swedish Patent 7802554-1, the attachment on the guard is clamped
30 between the helmet and a holder mounted thereon. The holder is formed to clamp the attachment in different angular positions, but the stresses on the hinge will be large during pivoting, resulting in considerable

wear, which in turn results in that the fixing positions are no longer distinct after some time.

In another implementation, according to the Swedish published specification 341 574, friction washers and a helical spring are used to fix the guard in different angular positions by friction. One of the disadvantages of this design is that the hinge device protrudes prominently from the helmet in a transverse direction, with accompanying risk of accidents.

The object of the invention is to achieve a hinge device, improved in relation to known such devices.

This is achieved in accordance with the invention in that a spring biased latch member in the holder together with edge surfaces on the guide portion form the latching means, and by the latch member being adapted to subject the guide portion to a force substantially at right angles to an edge surface thereon, and essentially upwards in the holder guide means. The hinge device may thus be made such as to require small space, while enabling distinct positions for the guard and good resistance to wear.

It is particularly advantageous here if the edge surfaces are disposed such that a larger force is necessary to turn the guard from its operative position to its inoperative position than vice versa. The risk of retracting the guard unintentionally is thus reduced, while it can readily and quickly be lowered into its operative position.

The invention will now be described in detail with the aid of embodiments illustrated on the accompanying drawing, where:

Fig 1 is a perspective view of a safety helmet on which a face guard has been mounted with the aid of an inventive hinge device;

Fig 2 is a view from above of the hinge device in Fig 1;

Fig 3 is a section along the line III-III in Fig 2;

Fig 4 is a perspective view of a further embodiment of the invention; and

5 Fig 5 is a section corresponding to the one in Fig 3 of another embodiment.

According to Fig 1 a face guard 1 is pivotably mounted on a safety helmet 3 with the aid of a hinge device 2, and can thus be retracted from the operative
10 position illustrated to an unillustrated inoperative position. In the hinge device 2 is included an attachment 4 associated with the guard 1, as well as a holder 5 removably mounted on the helmet 3. In this case the holder is mounted on the helmet via an
15 attachment member 6, in which it may be displaced longitudinally between different latching positions. The attachment member 6 may of course be implemented in many different ways according to the need.

As will be seen from Figs 2 and 3, the
20 attachment 4 has a substantially flat guide portion 7, accommodated in guide means 8 in the holder 5. The attachment 4 is pivotable in the holder 5 about a pin 9, which has its axis at right angles to the guide portion 7. A latching means 10 enables latching the
25 attachment 4 in different angular positions in relation to the holder 5 (see Fig 3). Included in the latching means are edge surfaces 11,12 on the attachment 4 and a latch member 13 disposed in the holder 5 for spring biased coaction with the edge
30 surfaces. The latch member 13 is here a spring plate fixed at one end in the holder 5, with its free end directed forwards.

When the attachment 4 is turned from the position depicted by full lines in Fig 3, the corner
35 14 between edge surfaces 11,12 will be nearer the fixed end of the latch member 13 than when the

.4

attachment 4 is turned from the inoperative position, denoted by chain dotted lines, back to the operative position. This means that a greater force will be required to pivot the guard 1 from the operative to the inoperative position than from the inoperative to the operative position.

The latch member is suitably made of metal, while the rest of the holder 5 may suitably be made from such as plastics. The attachment 4 may also be suitably made from plastics. The holder 5 itself may be made in one piece, but it is of course possible, with retained function, to part it, e.g. along the section line illustrated in Fig 2, to facilitate fitting the latch member 13. The different parts of the holder may then be joined together in a suitable way, e.g. by gluing.

In the embodiment illustrated in Fig 4, the latch member is made integral with the holder 5, and has the further task of maintaining the stud 15 (of which only one end is illustrated) in substantially semi-circular bearing surfaces 16 (of which only one is illustrated) on the holder. The bearing surfaces open towards the latch member 13, thus securely retaining the attachment 4 in the holder 5, but even so it can be readily latched when necessary. As with the previous embodiment, a greater force is required to retract the guard to its inoperative position than to lower it into the operative position. In this case the holder is advantageously made entirely from plastics.

It is of course possible to change the size of the pivoting angle between the operative and inoperative positions by selecting other configurations and placings of the edge surfaces 11,12. The corner 14 may optionally be rounded to a greater or lesser extent for lessening the turning force necessary when a

strong latch member 13 is used. The guide portion 7 on the attachment 4 may be formed very simply by having the latch member 13 coact with the underside of the attachment 4 and by having its free end facing
5 forwards.

In the embodiment illustrated in Fig 5, the latch member 13 comprises a spring biased metal plate which is accommodated at two of its opposing ends in the holder 5 such as to allow for its flexural
10 movement.

CLAIMS

1. Hinge device for a retractable face guard on a safety helmet, comprising an attachment 4 associated with the guard, the former having a substantially flat guide portion (7), a holder (5) mountable on the helmet, and having a guide means (8) such that the attachment is pivotable in the holder about an axis at right angles to the guide portion, and a latching means (10) for latching the attachment in different angular positions relative the holder, characterized in that a spring biased latch member (13) disposed in association with the holder (5) forms the latching means together with edge surfaces (11,12) on the guide portion, and in that the latch member (13) is adapted for subjecting the guide portion (7) to a force substantially at right angles to an edge surface of the guide portion, and essentially in an upward direction in the guide means (8) of the holder (5).

2. Hinge device as claimed in claim 1, characterized in that the edge surfaces (11,12) are disposed such that a greater force is required to turn the attachment (4) from the operative position of the guard to its inoperative position than vice versa.

3. Hinge device as claimed in claim 1, characterized in that two edge surfaces (11,12) are substantially at right angles to each other.

4. Hinge device as claimed in any one of claims 1-3, characterized in that the guide means (8) comprises two mutually parallel guide arms, between which the guide portion (7) is intended to be accommodated.

5. Hinge device as claimed in any one of claims 1-4, characterized in that the latch member constitutes a spring biased arm having a free, forwardly directed end.

5. Hinge device as claimed in claim 5, characterized in that the guide portion (7) is provided with two oppositely directed journal studs (15), each mounted in a substantially semi-circular bearing surface (16) on the holder (5) and that the latch member (13) is disposed such as to press, via the guide portion (7), the studs (15) radially towards the bearing surfaces (16) for retaining the attachment (4) in the holder (5).

7. Hinge device as claimed in claim 6, characterized in that the latch member (13) is an integral part of the holder (5), which is suitably made from plastics.

8. Hinge device as claimed in claim 5 or 6, characterized in that the latch member (13) is of metal and is cantilevered in the rest of the holder (5), which is of plastics.

9. Hinge device as claimed in any one of claims 1-4, characterized in that the latch member (13) is a spring biased metal plate accommodated at two opposing ends in the holder (5) and coacting between these ends with the guide portion.

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FIG.1

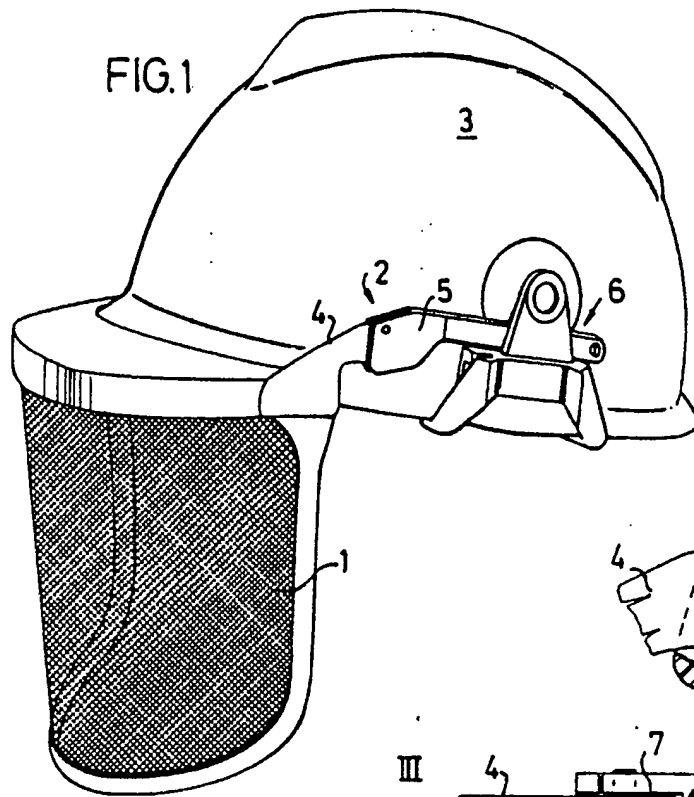


FIG.5

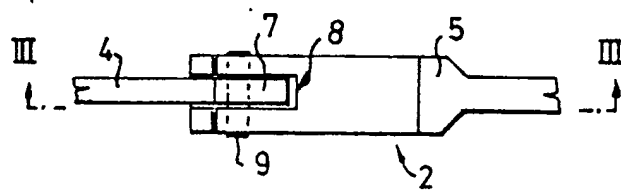
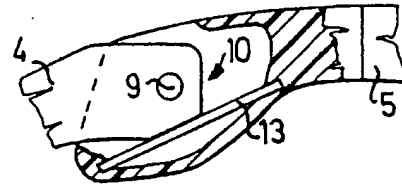


FIG.2

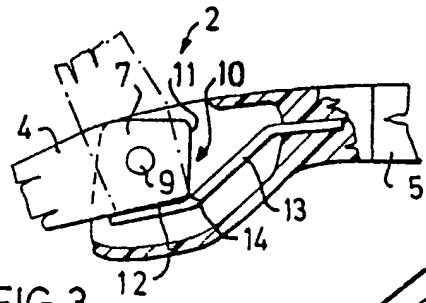


FIG.3

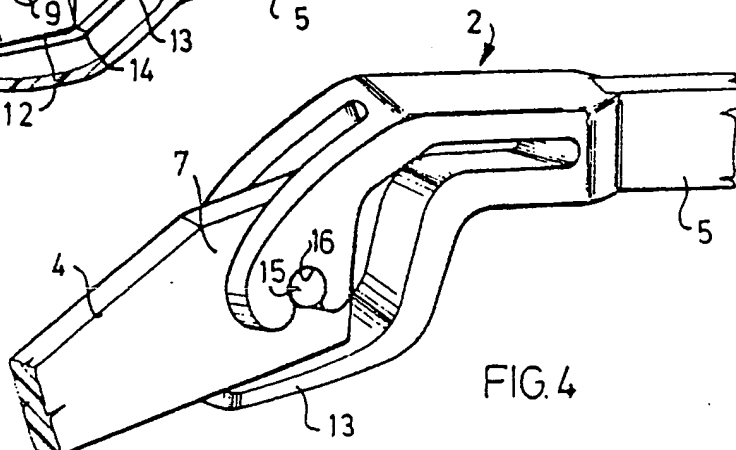


FIG.4

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE85/00529

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
A 42 B 3/00		
II. FIELDS SEARCHED		
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Classification System	Classification Symbols	
IPC 4	A 42 B 1/24, 3/00, /02; A 61 F 9/04, /06	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT *		
Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US, A, 3 147 487 (E L HOEFMAN) 8 September 1964	1-5, 8, 9
X	US, A, 2 588 553 (A MCWETHY) 11 March 1952	1-5, 8, 9
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1986-02-14	1986-03-03	
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